# A Clearer View of the Classroom

"It is not enough that teachers' work should be studied: they need to study it themselves."
Lawrence Stenhouse (1975, p.143)

**Abstract**

The use of video to support professional learning in education is increasing. Any acquisition of equipment should be considered carefully against the cost and the potential of the technology to support professional learning.  This research builds upon a pilot study which suggests that video can contribute to the professional education of teachers when it is undertaken in a democratic, respectful and supportive way. It enables teachers to articulate and explore ideas to improve professional learning and educational practice within safe spaces which encourage new ways of co-operation.

Dunne (1993) draws our attention to the complex nature of practice and how it is acquired and developed cumulatively and co-operatively over time by its insiders. Fielding et al. (2005) argue that factors influencing the transfer of good practice are time-consuming and involve mutual engagement of insiders in a joint endeavour. Biesta (2015) foregrounds how practice requires collective development and consideration. This research explores the strengths and limitations of technology in supporting professional learning. This small-scale study, comprising of case studies from multiple adult learning sites, aims to identify guiding principles capable of supporting the development of good educational practice using video. The intention is to determine the extent to which video positively impacts on teachers' professional learning.

## 1.Introduction

A pilot study carried out in early 2019 suggests that video can contribute to the professional education of teachers when it is undertaken in a democratic, respectful and supportive way. It enables teachers to articulate and explore ideas to improve professional learning and educational practice within safe spaces which encourage new ways of co-operation. This small-scale study with practitioners within post-19 provision suggests that although the recording provides an authentic artefact which enables teachers to engage with reflection, watching oneself in action may not be sufficient enough to develop the critical reflection skills needed for professional learning. Encouraging non-hierarchical informal contact amongst peers may enable teaching staff to safely view content and create genuine dialogue on practice. However, without the underlying self-awareness, noticing skills and knowledge of pedagogy, the conversations may not pay attention to key points. In this case, being able to draw out teacher perceptions, what is noticed, and connecting what is noticed by the teacher to evidence from peer-reviewed research and pedagogical knowledge are important aspects of the collegial dialogue.

Hierarchical presence may restrict teacher learning as observers may become conflicted about their own agency and offer their points of view on the teacher's practice. Depending on relational trust and openness, strong collegial relationships may provide support and comfort to teachers whose view of their practice is highly critical.

The learner videos help teachers to reflect on their own practice. Data from this study suggest teachers are able to distance themselves from the teacher in the video and refer to themselves as outsiders. As teachers are able to distance themselves from their own practice and view video content critically as an outsider, video's appeal for professional learning is enhanced.

2.**Literature Review**

Video technology encompasses any technology that is used to capture a visual and audio artefact of classroom practice.

Affordances of video

Class recordings benefit from certain affordances: recordings act as a concrete authentic artefact that captures real-time activity. This enables teachers to trust the content produced (Borko et al., 2008; Marsh and Mitchell, 2014). Brophy (2004) highlights that video has the potential to identify the critical aspects of practice. However, Marsh et al. (2010) report that video is limited by the view that it captures and therefore not all activity on display is captured sufficiently to allow for reflection, interpretation and discussion.

Reflections

Teachers' initial self-reflections may identify superficial surface details rather than critical aspects of practice (Star and Strickland, 2008; Berliner, 1994). Video as part of a longer-term professional development programme may help to develop the reflection skills of teachers (Seidel et al., 2011). Seidel et al. (2011) argue that teachers selectively consider and decipher complex classroom activity and use their prior knowledge to identify what is key and significant. This professional vision, according to Sherin et al. (2007), is located in two categories: noticing and knowledge-based reasoning.

Noticing

Professional vision is being able to identify and interpret significant features in a classroom. Watching oneself in action may not be enough to develop the critical self-reflection skills needed for professional learning, but viewing video content may support the development of 'noticing' skills (Berliner, 1994; Seidel et al., 2011; Sherin and Han, 2004; Tripp and Rich, 2012). Only on 'noticing' relevant information, can teachers consider how to proceed and this development is possible through communities of practice where there is co-construction of new ideas through peer to peer dialogue (Charteris et al., 2013; Marsh et al., 2010). Harford et al. (2008) suggest that the peer-based nature of the activity is critical to scaffolding the reflections that take place.

However, multiple viewings by individuals may also help to develop noticing skills (Kong et al., 2009; Rosaen et al., 2010).

## Knowledge-based reasoning

Using theoretical knowledge to interpret and understand what is happening in the classroom is part of professional vision development (Sherin, 2007; Seidel et al., 2011). The ability to carry out selective observation (van Es and Sherin, 2002) relates to Schon's (1987) conception of reflection on action.  Schon (1987, p.2) cites that teachers are often "expected to use ... professional judgement". This allows teachers to build their skills in relation to pedagogical decision making and problem solving. However, there is an assumption that teachers are well-informed or have the experience of being reflective.  Schon (1987, p.2) asserts that any framework or tool which supports professional learning is only as "beneficial as the user is proficient."

## Isolation and collaboration

Teaching can be an isolating activity (van Es, 2012) as teachers are often separated by time, space, and distance. Professional learning may take place if an environment and culture of professional learning is present: strong collegial relationships that involve high-quality discussion and coaching which moves practice and thinking forward (Fielding et al., 2005; Joyce and Showers, 1996; Kraft and Papay, 2014). Holmes et al. (2001, p.1) coined developmental collective discussion as 'communal constructivism'. However, Flinders (1988) states that although the existence of professional isolation may restrict collegial discussion, it may be used by teachers as a means of protection from outside interference. Teachers may consider collegial interactions a threat to professional survival, choosing instead to focus on activity that leads directly to task completion. Similarly, in respect of teacher autonomy, Fullan and Hargreaves (1991) argue that demanding teachers to collaborate may result in contrived congeniality rather than developing an honest collaborative learning culture. It appears that teachers may need convincing that discussions will lead to productive discourse (Biesta, 2015).  This raises a question: would teachers collaborate without organisational direction? Guskey (2000) reports that notable improvements in education almost never take place in the absence of professional development.

Dunne (1993) reports that knowledge is developed through the experience of living with others. Similarly, Tripp et al. (2012) report that teachers prefer to engage with others in collaborative groups to reflect and analyse video content, over reflecting alone. Developing pedagogical language and learning collaboratively enhance the video community of practice (Marsh et al., 2014).  However, it appears that teacher learning is complex and video alone may not be enough for teacher practice to develop (Brophy, 2004; Marsh and Mitchell, 2010; Borko, 2008). Miller and Zhou (2007) concur that without structural input from colleagues, teachers' learning tends to be limited by their own background experience. Like learners, teachers can only understand an experience within the knowledge they have. For learning to take place, having an ethos of inquiry and a willingness to explore unasked questions may have a positive impact (Bokeno, 2008; Fletcher, 2012).  In relationships where hierarchy is present, those with power may become

conflicted about their own agency as they consider how much power they should exert (Heller, 1999). Marsh et al. (2014) report more research is required to understand the relationship between personal and collective learning, with video.

Fielding (2015) asserts the importance of willingness to try something out, but Biesta (2015) reports that teachers are driven by goals and these appear short-term, focusing on process. Video may provide unwanted challenge to teachers who have to think hard about their learning. Therefore, some teachers may not see collaborative inquiry which is focused on student understanding as relevant (Zech et al., 2000).

Video Learning

Professional vision could be developed through video content of not-so-good practice. Mitchell et al. (2010, p. 405) assert there is value in viewing "mediocre" and even "bad practice" as it affords insights into "real classrooms" for novice teachers. Borko et al. (2008) report that trainee teachers develop deeper learning with exemplar video practice and pedagogical practice. Likewise, where veterans model vulnerability through sharing their videos with trainees, trust is promoted as is standardisation of judgement (Whitehead et al., 2007). However, this practice is uncommon: normally trainee teachers are recorded and reviewed (Sherin, 2003). Seidel et al. (2005) report that teachers whose professional development is organised around their own teaching find the experience to be more stimulating. However, where video is shared for observation, teachers experience feelings of vulnerability (Marsh and Mitchell, 2010).

Teachers appear reluctant to share their videos (Sherin et al., 2004; Grossman et al., 2001). Research suggests that over time teachers can have meaningful discussions with their colleagues around video from their own classrooms (Little, 2002; Marsh, 2018; Rosebery et al., 1998), but teachers can be reluctant to comment critically about their peers' practices (Zhang, et al. 2011; van Es, 2012). Safe ways to relate to the teacher and the students in the video are needed, but also with each other. Therefore, a critical aspect of building a strong professional learning community is fostering a reciprocity of equality within professional partnerships which helps to establish a good rapport and trust (O'Leary, 2019; Fielding et al., 2015; Biesta 2015).

3.**Methodology**

New participants to the research project were not possible due to Covid-19 lock-down. Therefore, teachers who had previously participated in a video capture pilot and others who had used the technology for observations and personal development were invited to participate.

Methods to capture individual's accounts of experience include audio recorded interviews which capture the complexities of real-life situations. The case studies were collected in five sites of adult learning and transcribed: numbered from 1 to 5.

There was an expectation that up to ten new teachers would have sampled video capture for professional learning. As before, many of the recordings would have taken place during the last academic term once other learning projects had been completed. This would have provided a

greater spread of ideas. However, classes closed mid-way in March 2020 due to the Covid-19 pandemic which meant that no additional classes were recorded.

## 4. Ethical considerations

This project was subject to the BERA guidelines (BERA 2011) where for example participation was voluntary, recordings were deleted post transcription. The confidentiality of participants is respected through the anonymisation of information and there was no link to performance management and appraisal.

## 5. Findings and Discussion

The study findings indicate that initial self-reflections using video elicit an emotional response as teachers become distracted by superfluous detail. After multiple viewings, this is lessened as 1 said, "I just thought oh no, that looks really awful, but then I thought afterwards, that's apparently what I look like when people look at me. Apparently, that's what they see so why worry about it."

As reported by Marsh and Mitchell (2014), video as an authentic artefact encourages teachers to engage with reflection and take ownership of personal development: thinking longer and deeper about practice, not performance.  As 4 said, "You actually see how it went rather than how you think it went." Recognising that video is a true account, 4 said, "You can't hide behind anything. It's the truth."

However, watching oneself in action may not be sufficient enough to develop the critical reflection skills needed for professional learning as reported by Berliner (1994) and Seidel et al. (2011). Individual teachers with greater self-awareness and pedagogical knowledge may be able to identify key elements of practice that would help them improve. As 1 said after self-reflection, "It was the little things .. the small tweaks … that helped to improve things," but less self-aware teachers may not recognise or be willing to share areas for development.

The teachers talk about the importance of others to help with reflections. As 1 said, "I think it is a healthy way of working rather than me going away and looking at it alone and not picking up on things," and 3 said, "I wasn't capable of evaluating myself to the fullest. It was all about what was really bad." Therefore, building strong collegial relationships through encouraging non-hierarchical informal contact may enable teaching staff to safely view content and create genuine dialogue on practice as well as identifying and owning development areas.  1 said, "We collaborate well in an informal manner," going on to say that "It's not an unprofessional approach, it's a friendly approach." Likewise, 3 said, "I'm much better having someone to bounce [ideas off]." However, there appears to be prerequisites to sharing: 5 said they would share the video with someone who "understood the challenges of the area of teaching", someone you "trust and respect", "is a good tutor" and "who will be honest with you." There is concern that honesty may not be forthcoming from peers as 5 said, "I don't know whether they'd [my peers] be honest enough. It's very difficult to comment on people's teaching because it can be quite a

sensitive thing," and 2 said, "Everybody wants to do it without offending anybody," as noted in van Es (2012). Marsh and Mitchell (2014) stated, more research to compare individual and collective learning is required.

Having privacy and ownership of video content fosters trust. Whereas, video recording for sharing may invite fear and performance anxiety. As 3 said, "I was anxious initially about sharing it with other people. Sharing a video for observation may cause feelings of vulnerability as reported by Marsh and Mitchell (2010).

Therefore, having collegial others that can provide an additional view of the events, through mutual development, may provide a springboard for collegial dialogue, or they can help to find the key ingredients of effective practice without mutation. As 1 said, "You have an idea when you come out of the lesson on what worked well and what didn't. You'll look back at the video with a preconceived idea in your mind. You see different things through collaborative reflections. If you watch it with someone else, they can say, hang on a minute.. ."

Hierarchical presence may restrict teacher learning by providing their view of the teaching activity. This could be a result of conflict with their own agency as reported by Heller (1999). As 3 said, "We compared not only what we saw, but our own perceptions of the video," and 4 said, "It is like from two different points of view." In this way, a conflict in ideas may emerge. As 4 demonstrated, "[they] saw no problem with that .." and "[they] thought everything seemed to run smoothly and everything was fine, but I was thinking … what I could do better. It was my reflection, that was." Sharing performance comments with teachers may restrict learning for a teacher who is starting to question their own practice. As 4 said, "[they] pick up on things from an outsider's point of view, I was looking at how I could improve."

Time for practitioners to view and reflect prior to dialogue may help to draw out musings, reduce fear and embarrassment of sharing. As 3 said, "I like the chance to think by myself. I like the chance to have somebody else add to that also," and 4 said, "I should have reviewed it by myself first. You've got to get past yourself before you can actually focus on the important bits."

Once over the initial experience of seeing oneself in action, there is evidence of video increasing the teacher's capacity to think about their own practice and own it. As 5 explained, "It's a bit like when you do your driving test and you kind of know the bit where you went wrong, the bit that made you fail." When asked how they know, 5 responded, "You know these things from when you've done a good session, things you've learned, when you've had good visits and people have said that went well." This knowledge is used to ascertain whether the video recording shows good or not so good practice. This store of knowledge perhaps enables some practitioners greater noticing skills than others. As 3 said, "Without knowing what you're looking for, I'd be critiquing every element of my teaching."

Some teachers appear to be able to separate themselves from the teacher in the video: be able to reflect on what is seen like an observer. They comment on others as 'external' to the experience and as 'outsiders'. As 4 said, "You can go away and critically analyse yourself as if you

were the observer. You're actually looking at it from an observer's point of view. You've still got your internal thoughts, your own reflections but you've got an added layer, the external factor," and 3 said, "[I] tried to look at it as an outsider, like I was watching myself," and "You could see it from that external perspective."

Some unexpected findings were that those operating as observers with a hierarchical role may experience a conflict and feel compelled to present their point of view as reported by Heller (1999), but risk reducing the teacher's natural curiosity on their own practice. Further research may be required to understand the dynamics involved.

Next, Zech et al.'s (2000) research that video may not fit into the teacher's perception of professional development as it is not usual in practice: 5 reported:

> "It's a lot more work in terms of when you're doing it yourself – thinking about the evidence. When you're being observed, … someone else thinks through and helps you to come up with a plan and picks out things for you to improve. So, I think it's [video reflection] is harder to do yourself because you have to do a lot of thinking. You're having to pick out what are the important things."

However, this learning may help to develop teachers to become their own observers and own their professional learning, rather than development being something that is done to teachers. It may be that some practitioners would not welcome such a mentally and time-consuming activity. Again, this idea may require further research.

## 6. Key findings

- Watching oneself in action may not be enough to develop the critical reflection skills needed for professional learning.
- Building strong collegial relationships through encouraging non-hierarchical informal contact may enable teaching staff to safely view content and create genuine dialogue on practice as well as creation of and ownership of development areas.
- Through mutual agreement, having others to provide an additional view of the events may provide a springboard for collegial dialogue.
- Those with hierarchical power may restrict teacher learning by providing their view of the teaching activity observed. Observers may be conflicted about their own agency.
- Time for practitioners to view and reflect prior to dialogue may help to draw out musings, reduce fear or embarrassment of sharing.
- Allowing for privacy and ownership of video content fosters trust. Whereas, video recording for sharing may invite fear and performance anxiety.
- Developing the 'noticing' skills and pedagogical knowledge of practitioners may be important, so that they move quickly beyond surface-level information to focus on important aspects of teaching.

- Video content showing learner impact appears essential and practitioner footage appears less important but still valuable.
- Video appears to increase the teacher's capacity to think about their own practice and own it, and view content as an observer.
- Peers may find providing honest feedback challenging.

## 7. Recommendations

This small-scale study involves five teachers from the Adult Learning sector in unstructured interviews on the potential of video capture for professional learning. Due to lockdown/class closures, new videos were not recorded. Study involves pilot teachers and two others. Due to limited time as teachers engaged with emergency teaching, it was not possible to triangulate the results e.g. surveys, interviews with observers.  Therefore, findings should be viewed with these limitations in mind.

1.      To avoid fear and vulnerability being experienced by teachers, offer video capture as a no-strings attached and voluntary tool. In this way, as it is not a tool used for performance management, and trust is encouraged.

2.      Multi-year programmes may be more fruitful than short-term video programmes. Consider establishing non-hierarchical collegial networks to support the interactions.  As such, participants may require support to develop the noticing skills and pedagogical knowledge to make sense of content, and increasing their confidence to act as an observer of their own content. There will be variation between the needs of novice and expert, experienced and less experienced teachers, so consider scaffolding support.

3.      Consider ways in which teachers can be supported to develop noticing skills in preparation for video capture reflection. For example, sharing veteran videos with thinking voice to demonstrate the 'observer' thought processes. Sharing the veteran's metacognition including accounts of misjudgment could help to develop the questioning required by teachers. Then professional learning should be focused and organised around the teacher's own practice.

4.      Make technology easily accessible and of good quality so as to capture all class activity, including learner voice. Reduce onus on teacher to set up so as to increase uptake.  Lengthy recordings are not necessary as specificity increases focus. Consider 15 minutes of recordings.

5. Those in positions of power        may risk sharing points of view that may limit a teacher's thinking about their practice as well as invite fear of judgment.  The establishment of strong collegial relationships may help the teacher to develop their thinking around their practice with a view to increasing their confidence to act as an observer of their own content, with an increasingly developed skill for 'noticing' and pedagogical language.

6.	Provide time and space for learning to take place: the process may take longer as multiple examples are recorded, ideas revisited and shared through a strong professional learning community.


Word count: 3,499

**Appendices**

1. Dissemination Strategy

This report will be shared with the employer, participants, Professional Development Lead and the Quality Manager. Furthermore, presentation of findings will be shared with the Advanced Practitioner Network (Society for Education & Training) and through appropriate social media opportunities.

**Bibliography**

BERA. (2011). *Revised Ethical Guidelines for Educational Research*. Nottingham: British Educational Research Association

Berliner, D. C. (1994). Expertise: The wonders of exemplary performance. In Mangieri, J.N., Cathy Collins Block and Barnes, H. (1994). *Creating powerful thinking in teachers and students: diverse perspectives*. Fort Worth, Tx: Harcourt Brace College.

Biesta, G., Priestley, M. and Robinson, S. (2015). The role of beliefs in teacher agency. *Teachers and Teaching*, 21(6), pp.624–640.

Bokeno, R.M. (2008). Genus of learning relationships: mentoring and coaching as communicative interaction. *Development and Learning in Organizations: An International Journal*, 23(1), pp.5–8.

Borko, H., Jacobs, J., Eiteljorg, E. and Pittman, M.E. (2008). Video as a tool for fostering productive discussions in mathematics professional development. *Teaching and Teacher Education*, 24(2), pp.417–436.

Brophy, J. (Ed.). (2004). *Using video in teacher education*. Amsterdam: Elsevier.

Charteris, J. and Smardon, D. (2013). Second look – second think: a fresh look at video to support dialogic feedback in peer coaching. *Professional Development in Education*, 39(2), pp.168–185.

Dunne, J. (1993). *Back to the rough ground: practical judgment and the lure of technique*. Notre Dame: University of Notre Dame Press.

Fielding, M., Great Britain, University of Sussex and Demos (2005). *Factors influencing the transfer of good practice*. Nottingham: DfES.

Fletcher, S. and Mullen, C.A. (2012). *The SAGE handbook of mentoring and coaching in education*. London; Thousand Oaks, Calif.: Sage.

Flinders, D. (1988). Teacher isolation and the new reform. *Journal of Curriculum and Supervision,* 4(1), 17-29.

Freire, P. (1998). *Pedagogy of freedom: ethics, democracy, and civic courage*. Lanham: Rowman & Littlefield Publishers.

Fullan, M. G. and Hargreaves, A. (1991). *What's worth fighting for: Working together for your school*. Ontario, CAN: Ontario Public Schools Teachers' Federation.

Grossman, P., Wineberg, S. and Woolworth, S. (2001). Toward a Theory of Teacher Community. *Teachers' College Record*, 103(6), pp.942–1012.

Guskey, T. R. (2000). *Evaluating professional development.* Thousand Oaks, CA: Corwin Press.

Heller, R. (1999). Rhetoric and teacher education. *Teaching and Teacher Education*, 15(7), pp.727–740.

Holmes, B., Tangney, B. Fitzgibbon, A., Savage, T. and Meehan, S. (2001). *Communal Constructivism: Students constructing learning for as well as with others.* Proceedings of SITE 2001, Florida.

Kong, S. C., Shroff, R. H.  and Hung, H. K. (2009). A Web Enabled Video System for Self-Reflection by Student Teachers Using a Guiding Framework. A*ustralasian Journal of Educational Technology* 25 (4): 544–558.

Kraft, M.A. and Papay, J.P. (2014). Can Professional Environments in Schools Promote Teacher Development? Explaining Heterogeneity in Returns to Teaching Experience. *Educational Evaluation and Policy Analysis*, [online] 36(4), pp.476–500. Available at: https://scholar.harvard.edu/sites/scholar.harvard.edu/files/mkraft/files/kraft_papay_-_prof_env_teacher_development_eepa_full.pdf [Accessed 5 Dec. 2019].

Little, J. W. (2002). Locating learning in teachers' communities of practice: Opening up problems of analysis in records of everyday work. *Teaching and Teacher Education*, 18, 917–946.

Marsh, B. and Mitchell, N. (2014). The role of video in teacher professional development. *Teacher Development*, 18(3), pp.403–417.

Marsh, B., Mitchell, N. and Adamczyk, P. (2010). Interactive video technology: Enhancing professional learning in initial teacher education. *Computers & Education,* 54(3), pp.742–748.

Marsh, B. (2018, April). *Teachers supporting teachers in professional learning and the development of classroom practice: The use of video mediated peer coaching*. (Working Paper No.3). https://www.leedsbeckett.ac.uk/carnegie-school-of-education/research/working-paper-series/collectived/-/media/f13633ecb9e54d969d29936a2c1e73ba.ashx

Miller, K. and Zhou, X. (2007). 'Learning from classroom video: What makes it compelling and what makes it hard' in Goldman, R. and Al, E. (2009) *Video research in the learning sciences. New York:* pp. 321-334.

O'Leary, M. & Savage, S. (2019) Breathing new life into the observation of teaching and learning in higher education: moving from the performative to the informative, *Professional Development in Education*, 46(1), pp. 145-159.

Rosaen, C.L., Lundeberg, M., Terpstra, M., Cooper, M., Niu, R. and Fu, J. (2010). Constructing videocases to help novices learn to facilitate discussions in science and English: how does subject matter matter? *Teachers and Teaching*, 16(4), pp.507–524.

Rosebery, A. S. and Warren, B. (1998). Interanimation among discourses: One approach to studying learning in teacher research communities. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.

Seidel, T., Stürmer, K., Blomberg, G., Kobarg, M., and Schwindt, K. (2011). Teacher learning from analysis of videotaped classroom situations: Does it make a difference whether teachers observe their own teaching or that of others? *Teaching and Teacher Education,* 27(2), 259–267.

Seidel, T., Prenzel, M., Rimmele, R., Kobarg, M., Schwindt, K., Meyer, L., et al. (2005). Do videos really matter? An experimental study on the use of video in teacher professional development. In Constantinou, C. P., Demetriou, D., Evagorou, A., Evagorou, M.,  Kofteros, A., Michael, M., Nicolaou, C., Papademetriou, D. and Papadouris, N. (Eds.), *11th European Conference for Research on Learning and Instruction* (pp. 1117- 1118). Nicosia, Cyprus: University of Cyprus.

Seidel, T. and Shavelson, R. J. (2007). Teaching effectiveness research in the last decade: Role of theory and research design in disentangling meta-analysis results. *Review of Educational Research,* 77, 454-499.

Sherin, M. G. (2007). 'The development of teachers' professional vision in video clubs' in Goldman, R. and Al, E. (2009) *Video research in the learning sciences. New York:* pp. 383-395.

Sherin, M. G. and Han, S. Y. (2004). Teacher learning in the context of a video club. *Teaching and Teacher Education*, 20, pp. 163-183.

Sherin, M.G. (2003). Using Video Clubs to Support Conversations among Teachers and Researchers. *Action in Teacher Education*, 24(4), pp.33–45.

Schon, D. (1987). *Educating the reflective practitioner*. Washington, DC: American Educational Research Association.

Showers, B. and Joyce, B. (1996). The Evolution of Peer Coaching. *Educational Leadership,* 53, 12-16.

Star, J and Strickland, S. (2008). Learning to observe: using video to improve preservice mathematics teachers' ability to notice. *Journal of Mathematics Teacher Education,* 11(2), pp. 107-125.

Stenhouse, L. (1975). *An introduction to curriculum research and development.* London: Heinemann.

Tripp, T. and Rich, P. (2012). Using video to analyze one's own teaching. *British Journal of Educational Technology*, 43(4), pp. 678–704.

van Es, E.A. (2012). Examining the development of a teacher learning community: The case of a video club. *Teaching and Teacher Education*, 28(2), pp.182–192.

van Es, E. A. and Sherin, M. (2002). Learning to Notice: Scaffolding New Teachers' Interpretations of Classroom Interactions. *Journal of Technology and Teacher Education*. 10(4), pp. 571-596.

Whitehead, J. and Fitzgerald, B. (2007). Experiencing and evidencing learning through self-study: New ways of working with mentors and trainees in a training school partnership,*Teaching and Teacher Education*, 23(1), pp. 1-12.

Zhang, M., Lundeberg, M. A., Koehler, M. J. and Eberhardt, J. (2011). Teaching and Teacher Education, 27 (2), pp. 454-462.

Zech, L. K., Gause-Vega, C. L., Bray, M. H., Secules, T. and Goldman, S. R. (2000). Content-based collaborative inquiry: A professional development model for sustaining educational reform. *Educational Psychologist*, 35(3), pp. 207–217.